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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,750	11/25/2003	Ralph Attila Becker-Szendy	ARC920030055US1	8959

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EXAMINER

DANG, THANH HA T

ART UNIT PAPER NUMBER

2163

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/723,750

Applicant(s)

BECKER-SZENDY ET AL.

Examiner

Thanh-Ha Dang

Art Unit

2163

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 17-40 is/are rejected.
- 7) ☒ Claim(s) 15-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/25/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-14 and 17-40 are rejected in this Office Action.
2. Claims 15-16 are objected in this Office Action.

Claim Objections

3. Claims 26 and 38 are objected to because of the following informalities:
 - Claim 26 recites "... and **the virtual in the local ...**": indefinite and unclear limitation of the virtual?
 - Claim 38 recites "... and **the virtual in the local ...**": indefinite and unclear limitation of the virtual?

Appropriate correction is required.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1, 19 and 31 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 1 recites a method comprising "adding ...; allowing ... mechanism" that merely describes a number of processing steps. The steps are broadly recited without regard to any tangible way of implementing them. In the above limitations, it is unclear as to what kind of tangible result is obtained by the above

limitations to form the basis of statutory subject matter under 35 USC101 (101 Interim Guidelines, 26 October 2005).

Claim 19 is directed to non-statutory subject matter, which is program per se. The claim describes the instruction steps, which are directed to a mere program. The claimed invention is not supported by either a tangibly embodied on or in some form of computer readable storage medium, which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 USC101 (101 Interim Guidelines, 26 October 2005).

Claim 31 recites a service comprising “an addition of a federation layer ... data; an allowance of local applications ... mechanism” that is directed to software per se. The claimed invention is not supported by either a tangibly embodied on or in some form of computer readable medium, which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 USC101 (101 Interim Guidelines, 26 October 2005).

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 3, 7, 11, 21, 25, 29, 33 and 37 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The Claims 3, 21, and 33 contain subject matter ("virtual metadata server"), which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The Claims 7, 11, 25, 29 and 37 contain subject matter ("virtual file server"), which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

To expedite examination process, Examiner has interpreted "a virtual metadata server" as metadata server, and "virtual file server" as file server.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 5-6, 10-14, 19-20, 23-24, 28-30, 31-32, 35-36 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pub. No.

US2004/0030731 A1 issued to Iftode et al. ("Iftode"), and further in view of US Patent No. 6,938,039 issued to Bober et al. ("Bober").

As to **Claims 1, 19 and 31**, *Iftode teaches* a method of federating a local file system into a distributed file system while preserving local access to an existing data in the local file system, comprising:

- allowing local applications to access both the data exposed in the local file system and data in other parts of the distributed file system (*page 2 [0021]*); and wherein the federation layer establishes a detour between the local applications and the local file system, to provide access to a distributed mechanism (*Figures 1 and 3, page 2 [0021]*).
- *Iftode does not explicitly teach* adding a federation layer that allows both a local client and a plurality of distributed clients to access the existing data. However, *Bober teaches* adding a federation layer that allows both a local client and a plurality of distributed clients to access the existing data (*Abstract, Figure 3 wherein block 41 and 42 illustrates federation layer*).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to combine system and method for accessing files in a network teaching of Iftode with concurrent file access at a target file server during migration of file systems between file servers teaching of Bober to provide method and system which support federating files on distributed computer system with minimum disruption to applications operating on computer system environment.

As to **Claims 2, 20 and 32**, *lftode in combination with Bober teaches* wherein the federation layer comprises a virtual server that serves file data and metadata from the local file system to the distributed file system (*lftode, Figure 2, page 2 [0023] wherein the virtual directory functions equivalently to a virtual server*).

As to **Claims 5, 23 and 35**, *lftode in combination with Bober teaches* wherein the federation layer contains an object ID database for mapping between a file name and an object ID number that is unambiguous and stable (*lftode, Figure 3 wherein node id is equivalent to an object ID, page 1 [0017-18]*).

As to **Claims 6, 24 and 36**, *lftode in combination with Bober teaches* wherein the federation layer contains a distributed file system client for transferring and translating communications from a local application on the local computer system to the virtual server (*lftode, Figure 1, page 4 [0060, 0071]*).

As to **Claims 10, 28 and 40**, *lftode in combination with Bober teaches* further comprises installing the distributed file system client in the local computer system (*lftode, Figure 1 illustrates installing distributed file in local computer system, page 1 [0017]*).

As to **Claims 11 and 29**, *lftode in combination with Bober teaches* further comprises configuring the virtual file server to communicate with the distributed file system (*Bober, Figure 3 illustrates configuration of virtual file server (43) with the distributed file system (17, 18)*).

As to **Claims 12 and 30**, *Iftode in combination with Bober teaches further comprises:*

- temporarily disconnecting the local applications on the local computer system (*Bober, column 2, lines 48-51*); and
- reconfiguring the local applications to communicate with the distributed file system client (*Iftode, Abstract, page 3 [0055-56]*).

As to **Claim 13**, *Iftode in combination with Bober teaches further comprises assigning an object ID number to each object found in the local file system (Bober, column 10, lines 50-56).*

As to **Claim 14**, *Iftode in combination with Bober teaches further comprises generating the object ID number by counting the objects that were found in the local file system (Bober, column 10, lines 52-56).*

Claims 3-4, 7-9, 18, 21-22, 25-27, 33-34 and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pub. No. US2004/0030731 A1 issued to Iftode et al. ("Iftode") and further in view of US Patent No. 6,938,039 issued to Bober et al. ("Bober") as applied to Claims 2, 6, 20 and 32 above respectively, and further in view of Pub. No. US2003/0078946 issued to Costello et al. ("Costello").

As to **Claims 3, 21 and 33**:

Iftode in combination with Bober teaches the elements of Claims 2, 20 and 32 as stated above respectively.

Iftode in combination with Bober teaches a virtual storage server that serves file content (Iftode, Figure 2, page 2 [0023] wherein the virtual directory functions equivalently to a virtual server).

Iftode in combination with Bober does not explicitly teach wherein a virtual metadata server that serves file metadata; and wherein the virtual metadata and the virtual storage server serve data from the local file system to the distributed file system.

Costello teaches wherein the virtual server comprises:

- *a virtual metadata server that serves file metadata (Figure 6, block48); and*
- *wherein the virtual metadata and the virtual storage server serve data from the local file system to the distributed file system (page 3 [0039]).*

It would have been obvious to a person of ordinary skill in the art at the time of the invention to combine clustered files system teaching of Costello with system and method for accessing files in a network teaching of Iftode and concurrent file across at a target file server during migration of file systems between file servers teaching of Bober to provide method and system which enhance federating files in distributed file system environment.

*As to **Claims 4, 22 and 34**, Iftode, Bober in combination with Costello teaches wherein the virtual storage server is a virtual object storage server*

(Iftode, Figure 2, page 2 [0023] wherein the virtual directory functions equivalently to a virtual server).

As to **Claims 7, 25 and 37**, *Iftode, Bober in combination with Costello teaches further comprises installing the virtual file server in the local computer system (Costello, page 5 [0073]).*

As to **Claims 8, 26 and 38**, *Iftode, Bober in combination with Costello teaches further comprises installing the virtual metadata server in the local computer system (Costello, page 5 [0073]).*

As to **Claims 9, 27 and 39**, *Iftode, Bober in combination with Costello teaches further comprises installing the virtual object storage server in the local computer system (Iftode, Figure 2, page 2 [0023], wherein describes merging a virtual directory (which is equivalent to a virtual object storage), to local computer file system).*

As to **Claim 18**, *Iftode, Bober in combination with Costello teaches further comprises moving the virtual server into a kernel space for efficiency purpose (Costello, page 9 [0114]).*

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pub. No. US2004/0030731 A1 issued to Iftode et al. ("Iftode") and further in view of US Patent No. 6,938,039 issued to Bober et al. ("Bober") as applied to Claim 6 above, and further in view of Pub. No. US2004/0210644 issued to Mitch Prust ("Prust").

As to Claim 17:

Iftode in combination with Bober teaches the elements of Claim 6 as stated above.

Iftode in combination with Bober does not explicitly teach further comprises using a shared memory between the distributed file system client and the virtual server to enhance communication between the distributed file system client and the virtual server.

Prust teaches further comprises using a shared memory between the distributed file system client and the virtual server to enhance communication between the distributed file system client and the virtual server (Figures 1-2, wherein block113 illustrates shared memory; page 2 [0035]).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to combine network-based remote data storage system teaching of Prust with system and method for accessing files in a network teaching of Iftode and concurrent file access at a target file server during migration of file systems between file servers teaching of Bober to provide method and system which implement shared memory between distributed file system client and server in order to provide seamless access to distributed file system and server in a global computer network.

Claims 19-30 are essentially the same as Claims 1-12 except that the claims set forth the claimed invention as a computer program product rather than

a method and therefore are rejected for the same reasons as applied to Claims 1-12.

Claims 31-40 are essentially the same as Claims 1-10 except that the claims set forth the claimed invention as a system rather than a method and therefore are rejected for the same reasons as applied to Claims 1-10.

Allowable Subject Matter

7. Claims 15-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not teach or fairly suggest:

- Further comprises:
 - generating the object ID number as a tuple <I,G> of an inode number of the object found in the local file system, and a generation number;
 - wherein the generation number is increased anytime a same inode number is found for a different object; and
 - maintaining a deleted flag for objects that have been deleted, so the occurrence of the same inode number for different objects can be recognized as recited in **Claim 15**.
- Further comprises:
 - detecting multiple hard links to a same file by comparing an inode number of files;

- if one file has more than one hard link, using a same object ID number for the multiple names for that object; and
- deleting only the object when a last hard link has been unlinked as recited in **Claim 16**.

Citation of Pertinent Prior Art

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:
- Chen et al. (Pub. No. US2005/0021502), "Data Federation Methods and System".
 - Bobbitt et al. (US Patent No. 7,024,427), "Virtual File System".
 - MCLAuchlin (Pub. No. US2004/0193630), "System and Method for Efficient Integration of Government Administrative and Program Systems".
 - Kavuri et al. (Pub. No. US2005/0226059), "Clustered Hierarchical File Services".
 - Liang et al. (Pub. No. US2005/0044162), "Multi-Protocol Sharable Virtual Storage Objects".
 - Wehrman et al. (Pub. No. US2005/0015384), "Relocation of Metadata Server with Outstanding DMAPI Requests".
 - Lev Ran et al. (Pub. No. US2004/0255048), "Virtual File-Sharing Network".
 - Sheng (Ted) Tai Tsao (Pub. No. US2003/0191838), "Distributed Intelligent Virtual Server".

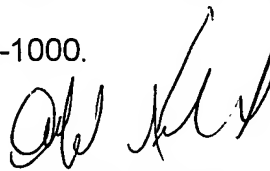
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh-Ha Dang whose telephone number is 571-272-4033. The examiner can normally be reached on Monday-Friday from 9:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thanh-Ha Dang
Examiner
Art Unit 2163


ALFORD KINDRED
PRIMARY EXAMINER